

#519

DEFIANCE ELECTRONICS

TECHNICAL MANUAL

OPERATING INSTRUCTIONS
AND
SERVICE MANUAL

DARKROOM, X-RAY, PORTABLE

MODEL-PDR-1
PART NO 311038

NSN: 6525-01-369-7178

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Defiance warrants model PDR-1 Darkroom against defects in material or workmanship for three years from time of sale. Defiance's sole obligation under the warranty is to repair, or at its option, to replace the unit. The buyer shall have no other remedy.)All special, incidental, and coincidental damages are excluded.) Written notice of breach of warranty must be given to Defiance within the warranty the warranty period. The warranty does not cover damage resulting from improper installation and maintenance, accident or misuse.

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SECTION I INTRODUCTION

1.1 GENERAL

This manual contains complete operating and maintenance instructions for Defiance Electronics, portable X-ray darkroom, Model-PDR-1

1.2 DESCRIPTION AND PURPOSE

The darkroom is a portable, lightweight, rapidly assembled/disassembled darkroom that provides a light tight environment for processing medical x-ray film within an ISO shelter or temper tent.

1.3 Leading particulars

The leading particulars of the darkroom are contained in table 1.1

1.4 Equipment supplied

Table 1.2 list the separate items supplied with the darkroom. Refer to section VII, Parts List, for a complete list of components.

1.5 Tools and Test Equipment

No tools or test equipment are required for erection or maintenance of the darkroom.

1.6 STORAGE DATA

There are no special storage requirements for the darkroom.

TABLE 1.1 LEADING PARTICULARS

ITEM	CHARACTERISTIC
Power Requirements	115-230 VAC 50/60 HZ
Ambient Temperature	40F to 120F (4.4C to 49C)
Transit Case Dimensions	18 X 18 X 60 inches
Weight	140 pounds
Site Requirement	Interior of an ISO Shelter or temper tent

TABLE 1-2 EQUIPMENT SUPPLIED

ITEM	DESCRIPTION
Frame	Modular tubular aluminum frame to support the light tight covering
Cover	Black vinyl cloth cover which attaches to modular frame.
Fan	Ventilation fan to change air inside darkroom.
Safelight	To provide safelight for blue and green sensitive X-ray film.
Electrical Power Strip	To provide electrical power within the darkroom.
Technical Manual	Complete operating and maintenance instructions
Transformer	To provide 115 volt power to light and fan during 230 volt operation.

SECTION II INSTALLATION AND PREPARATION FOR USE

2.1 General

Check the transit case and content for any signs of damage before erecting the darkroom. If any damage is apparent, refer to Section V, Maintenance Procedures, for the applicable procedure.

2.2 Installation

The darkroom is designed to operate inside an ISO shelter or a temper tent, however it will work in any interior location.

CAUTION: DO NOT PERMIT LIGHT, TRANSFORMER, ELECTRICAL POWER STRIP OR FAN TO BE EXPOSED TO WATER OR RAIN.

2.3 Preparation for use

- (a) Remove transit case from shipping carton.
- (b) Depress pressure relief valve on transit case. Release latches and remove cover from case.
NOTE: Refer to Figure 2-1
- (c) To start assembly procedures first layout all frame members into three groups
White marked members are floor frame.
Red marked members are vertical frame.
Blue marked members are roof frame.

CAUTION: WHEN ASSEMBLING, ALL STENCILED MARKINGS GO TO OUTSIDE OF FRAME.

(d) Assembly

- Step 1 Spread dark room floor (part 1) on shelter floor
- Step 2 Lay long front floor member in place
- Step 3 Lock V1 member in corner of long front floor member and processor end floor member.
- step 4 Lay long rear floor member in place
- Step 5 Lock V3 member in corner of long rear floor member and processor end floor member
- Step 6 Lock V5 in corner of long rear floor member and door end floor member
- Step 7 Lock V7 in corner of long front floor member and door end floor member.
- Step 8 Lock short rear floor member to V5
- Step 9 Lock V9 to short rear floor member.
- Step10 Lock entry module floor member to V9
- Step11 Lock V11 to entry module floor member
- Step12 Lock entry module door strip in place. NOTE: This completes darkroom floor assembly.

- Step13 Lock V2, V4, V6, V8, V10 & V12 in place.
- Step14 Lock processor end roof member between V2 and V4.
- Step15 Lock long rear roof member between V4 and V6.
- Step16 Lock long front roof member between V2 and V8.
- Step17 Lock entry module roof member with cover snap between V6 and V8.
- Step18 Lock entry module roof member with cover snap between V10 and V12.
- Step19 Lock short entry module member between V6 and V10.
- Step20 Lock short entry module member between V8 and V12.
- NOTE: this completes the frame assembly.
- Step21 Refer to Figure 2-2. Attach first velcro flap to top of the long front floor member and the long rear floor member
- Step22 Unfold darkroom area cover (part 3) attach cover to modular frame. Start at snap 1 go on to snap 2, 3, 4 and 5. (see Figure 2-3)
- Step23 Seal velcro joints by firmly pressing into place.
- Step24 Seal darkroom area cover at intersection of cover and darkroom floor (see figure 2-2).
- Seal at following members:
- Long front floor member
 - Long rear floor member
 - Processor end floor member
 - Door end floor member
- NOTE: Insure fan entrance port is directly over x-ray processor location.
- Step25 Drape roof panel (part 4) over modular frame seal velcro joints on front, rear and two end panels by firmly pressing velcro into place.
- Step26 Drape entry module (part 5) in place and firmly press velcro into place. (see figure 2-4)
- Step27 Slide light deflector rod through loop at top of light deflector curtain. (part 2)
- Step28 Hang light deflector curtain on to modular frame. Press velcro joint into place (see figure 2-1).
- Step29 Install fan in fan port run electric cord through wiring port on top of darkroom, plug into service outlet.
- Step30 Attach light to bracket (see figure 2-1) and plug into service outlet
- Step31 Install x-ray film processor and tape with velcro to achieve a light tight seal.
- NOTE: This completes erection of the dark room and ancillary devices.

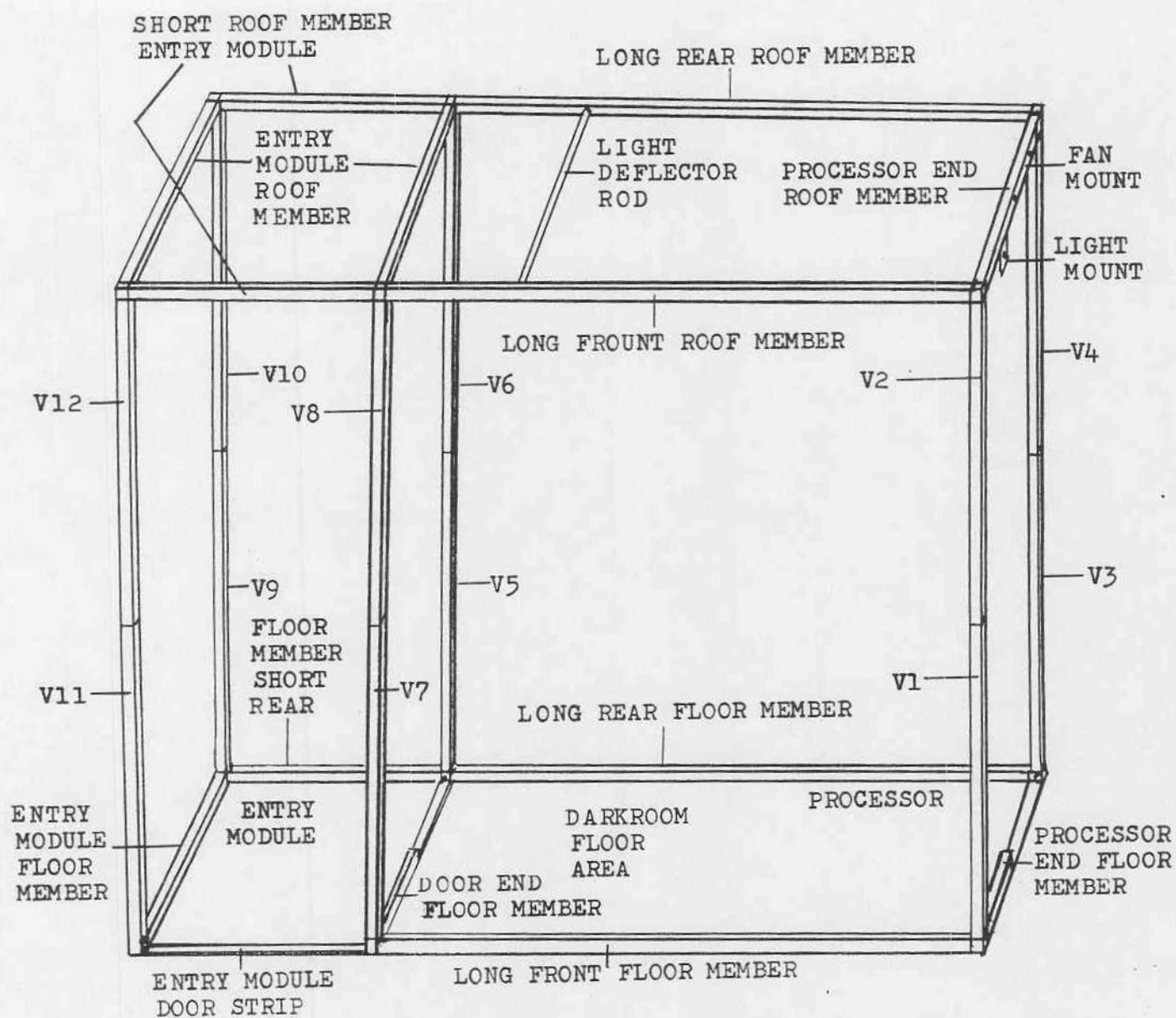
2.4 Operational check out

- (a) Enter darkroom area. Observe for light leakage.
- (b) Turn on fan
- (c) Turn on safe light.

2-5 115/230 volt operation

- (a) Operation on 115 VAC should use the power strip which is a component part of the darkroom.
- (b) 230 volt operation requires the use of the transformer assembly

NOTE: See illustration 2.6.



ASSEMBLY DRAWING OF MODULAR FRAME

FIGURE 2-1

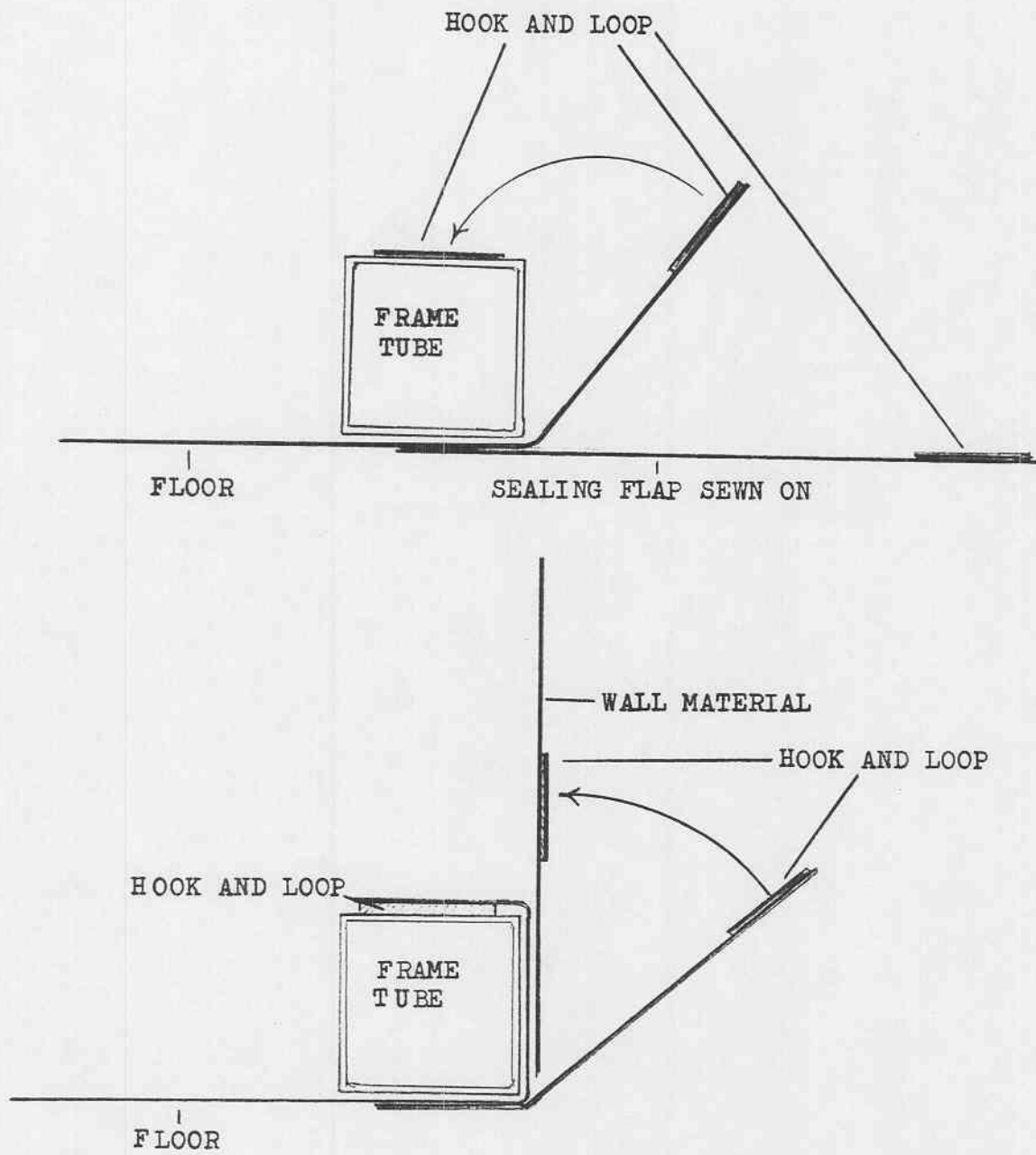
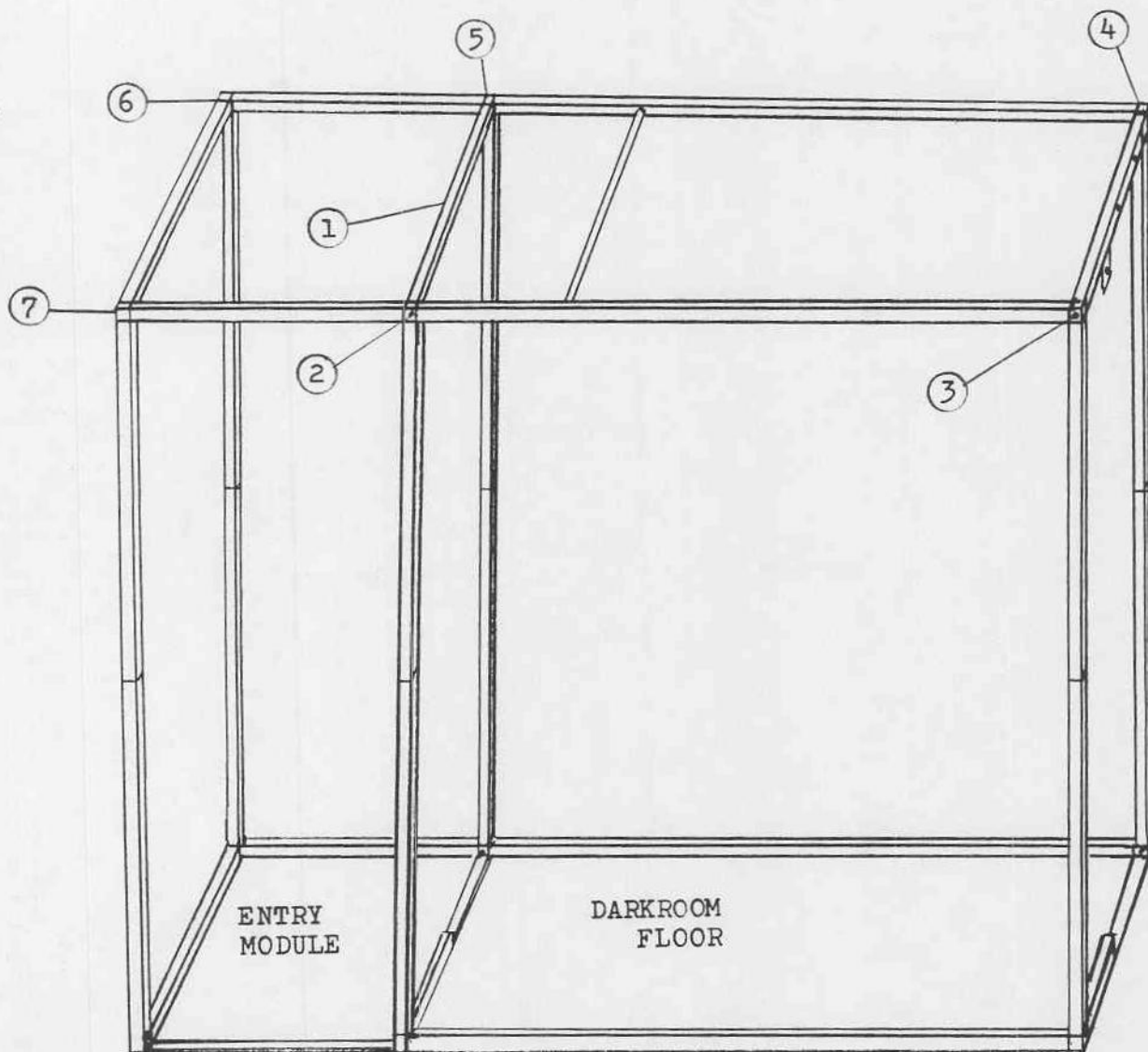


FIGURE 2-2



SNAP PATTERN COVER TO FRAME

FIGURE 2-3

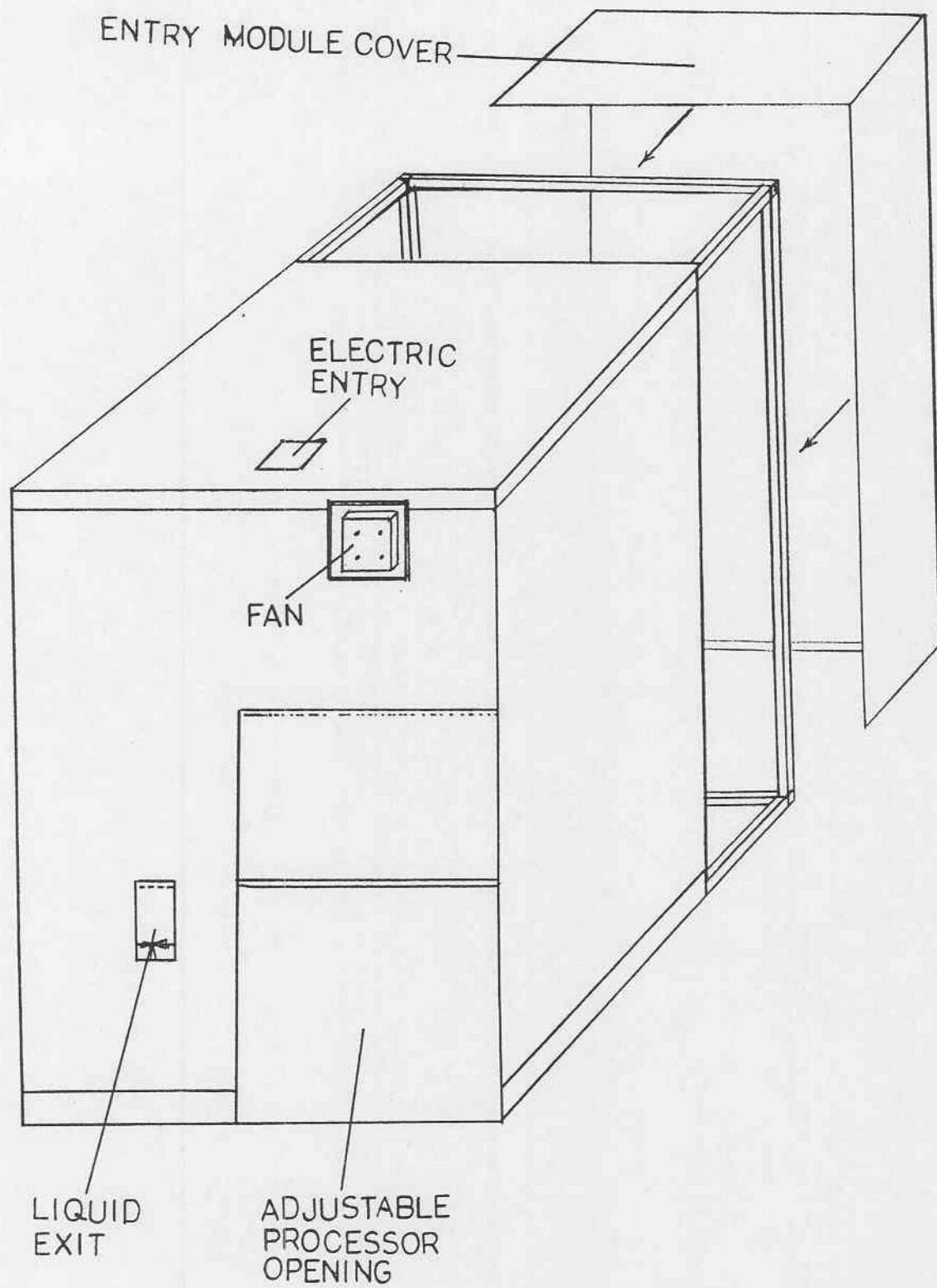


FIGURE 2-4

PORTABLE X-RAY DARKROOM
(REAR VIEW)

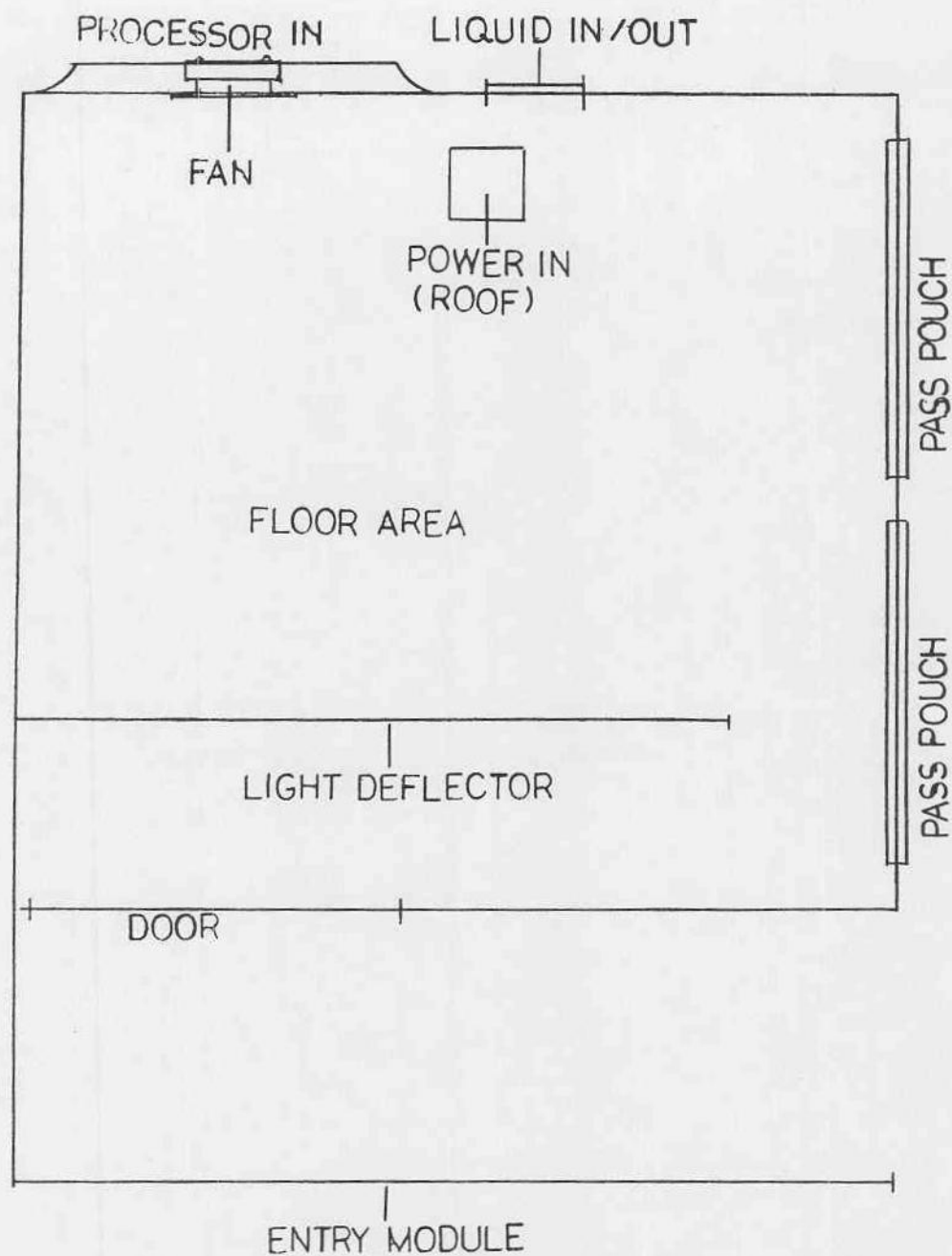
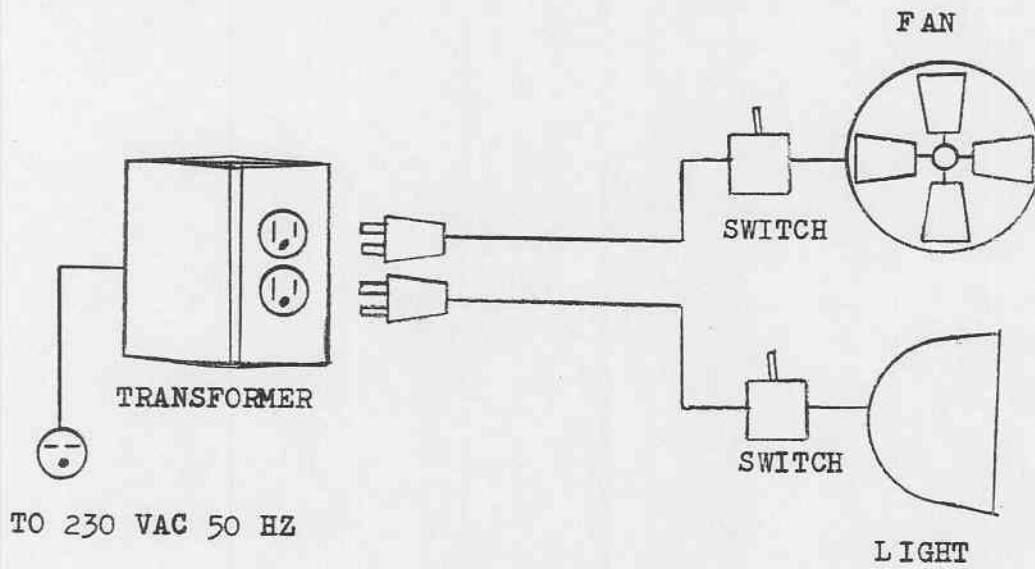
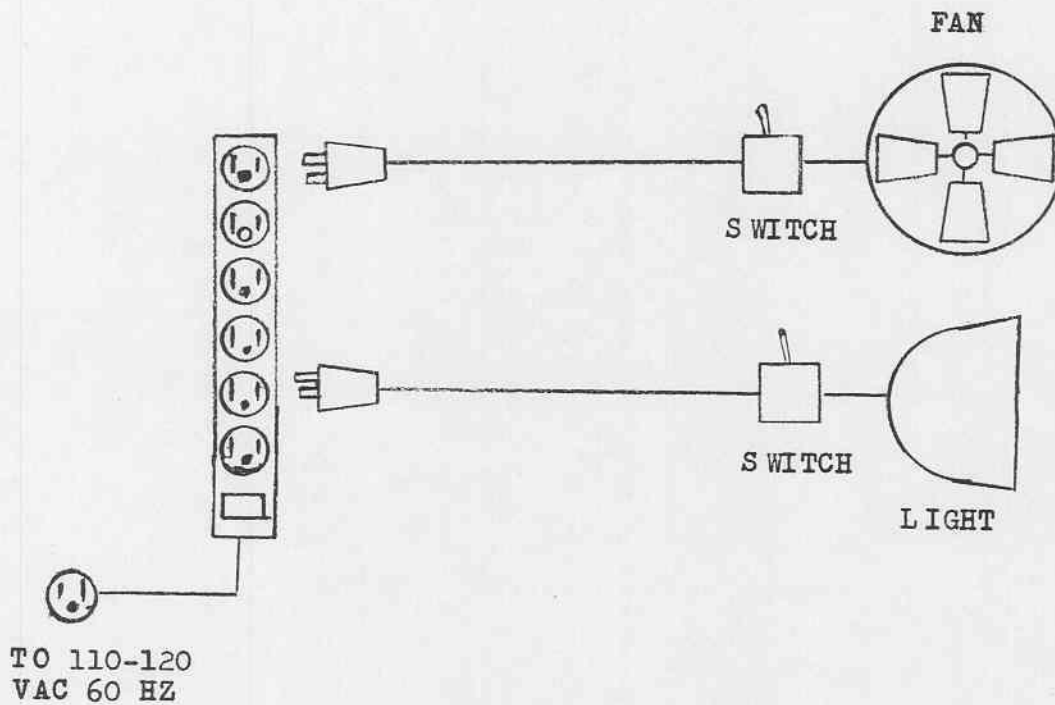


FIGURE 2-5

PORTABLE X-RAY DARKROOM
"FLOOR PLAN"

115 VOLT OPERATION



230 VAC OPERATION

FIGURE 2-6

SECTION III THEORY OF OPERATION

3.1 General

The darkroom provides a light tight area to facilitate the processing of x-ray film in an x-ray film processor. The darkroom provides both ventilation and safe light to aid in the processing.

SECTION IV
OPERATING INSTRUCTIONS

4.1 Operators Controls

TABLE 4.1 (SEE FIGURE 4.1)

INDEX	NAME	USE
1	Fan	To ventilate darkroom
2	Electrical entry	for power to darkroom
3	Liquid port	For liquids enter/exit for processor
4	Light tight flap	For sealing off light around the x-ray film processor
5	Fan switch (inside darkroom)	off/on fan control
6	Light switch (inside darkroom)	Off/On light control
7	Film pocket (not shown)	To hold unexposed film
8	Film pocket (not shown)	To hold exposed film

4.2 Operating Procedures

Prior to operating the darkroom preform the operational checkout procedures given in paragraph 2.4. The actual operating procedures of the darkroom will operate to supply the correct environment. There are no operating adjustments associated with normal operations.

4.3 Turn off procedure

Turn off fan, turn off light and exit darkroom.

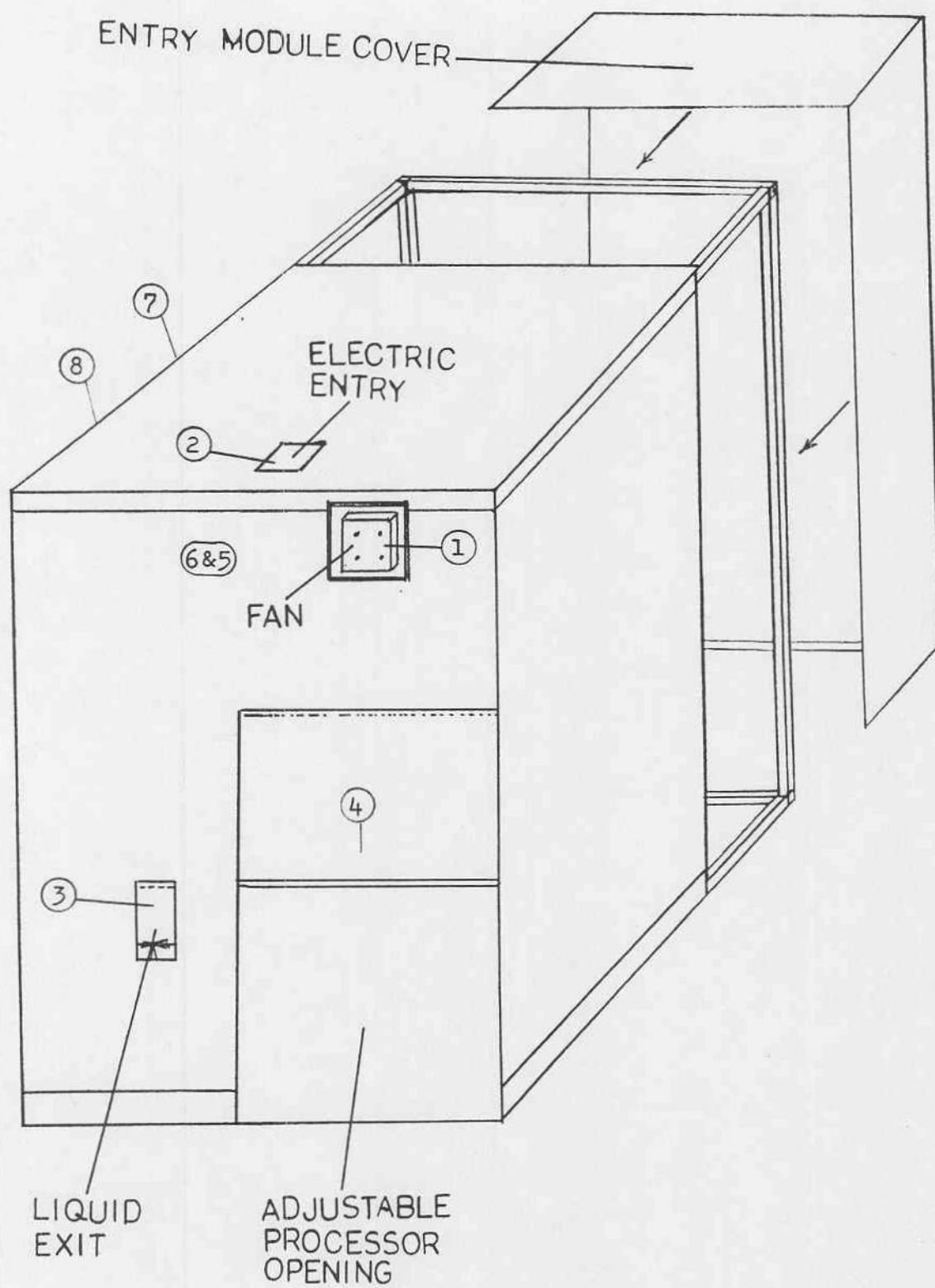


FIGURE 4-1

PORTABLE X-RAY DARKROOM
(REAR VIEW)

SECTION V
MAINTENANCE INSTRUCTIONS

5.1 General

This section contains maintenance instructions for the darkroom. If replacement parts are required for any of the maintenance procedures detailed in the following paragraphs, refer to Section VII, Parts List.

5.2 Cleaning

Any accumulation of dust and dirt should be periodically removed from the darkroom. Soapy water may be used as required on the frame and cover. Electrical items should be disconnected from the power source and then wiped with a damp cloth.

5.3 Inspection

Visually inspect the darkroom for frayed or torn fabric and loose velcro.

5.4 Performance Verification

The operational checkout procedure given in paragraph 2.4 should be performed daily to verify proper function of the darkroom

5.5 Trouble shooting

TABLE 5.1 DARKROOM TROUBLESHOOTING

PROBLEM	CHECK THE FOLLOWING
Fan motor will not start	Power failure, Switch off, Not plugged in, Defective switch, Defective fan, Unusually low voltage.
Fan overheating	Low voltage, Improper voltage, Louvers blocked.
Light will not burn	Power failure, Switch off, Not plugged in, Defective switch, bulb defective, Unusually low voltage.
No power from transformer 230 VAC operation	Power failure, Not plugged in, Fuse blown, Low voltage.

SECTION VI
PREPARATION FOR RESHIPMENT

6.1 General

To prepare the darkroom for reshipment proceed as follows:

- (a) Perform turnoff procedure given in paragraph 4.3
- (b) Disconnect all power cables.
- (c) Disassemble darkroom by reversing instructions in paragraph 2.3 and figure 2.1.
- (d) Pack light, fan, transformer and electric strip into protective compartment of case.
- (e) Pack modular frame in carrying case.
- (f) Lay protective foam on top of frame in case and pack folded fabric sections on top of foam.

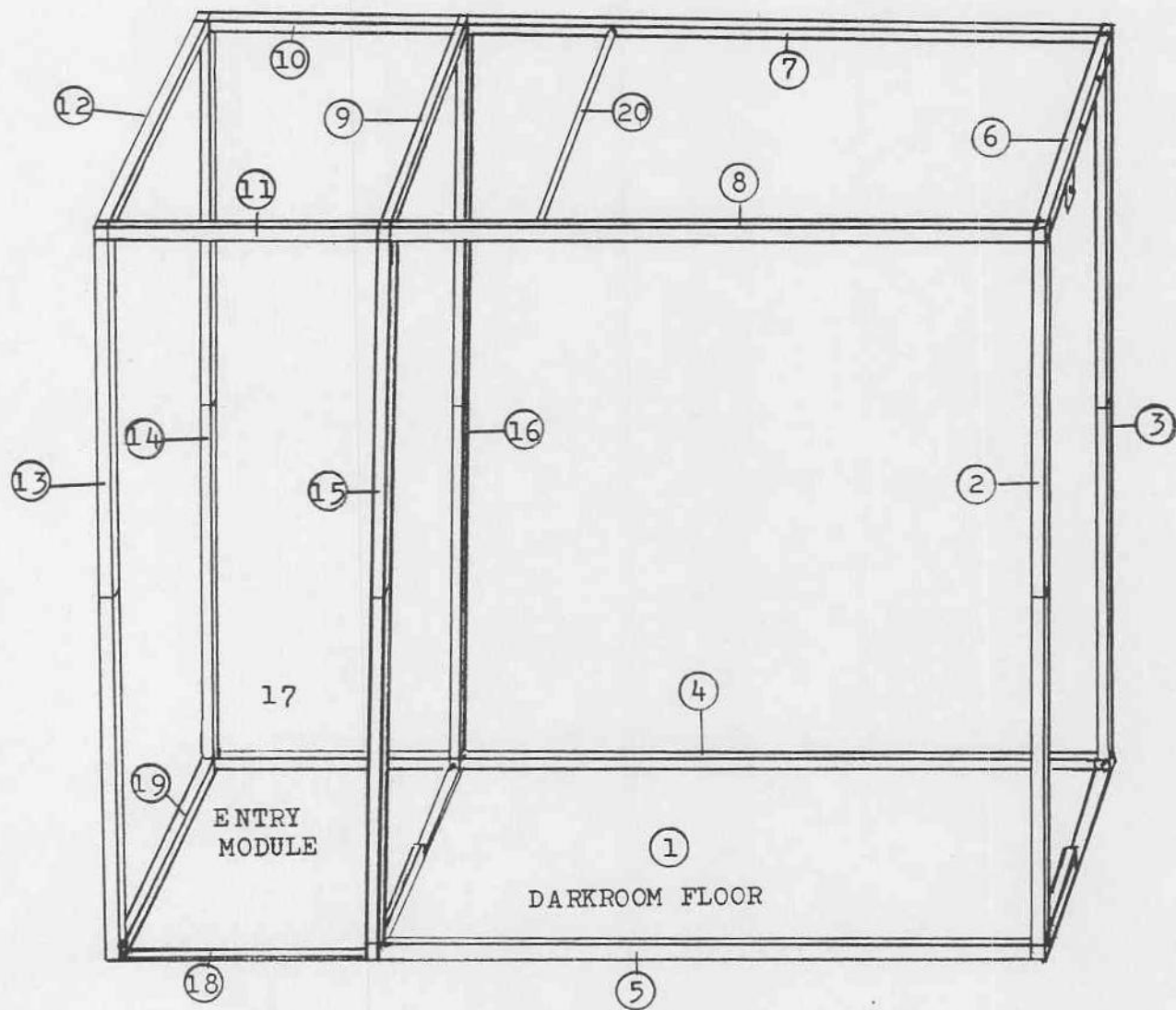
6.2 Reshipment

The transit/carrying case should be placed into a suitable shipping carton for additional protection during transit.

SECTION VII
PARTS LIST

SEE FIGURE 7-1

INDEX NO	PART NO	DESCRIPTION	QUANTITY
1	PDR-1-1	FLOOR WITH 2 FRAME MEMBERS	1
2	PDR-1-2	VERTICAL MEMBER	1
3	PDR-1-3	VERTICAL MEMBER	1
4	PDR-1-4	FLOOR MEMBER	1
5	PDR-1-5	FLOOR MEMBER	1
6	PDR-1-6	ROOF MEMBER	1
7	PDR-1-7	ROOF MEMBER	1
8	PDR-1-8	ROOF MEMBER	1
9	PDR-1-9	ROOF MEMBER	1
10	PDR-1-10	ROOF MEMBER	1
11	PDR-1-11	ROOF MEMBER	1
12	PDR-1-12	ROOF MEMBER	1
13	PDR-1-13	VERTICAL MEMBER	1
14	PDR-1-14	VERTICAL MEMBER	1
15	PDR-1-15	VERTICAL MEMBER	1
16	PDR-1-16	VERTICAL MEMBER	1
17	PDR-1-17	FLOOR MEMBER	1
18	PDR-1-18	FLOOR MEMBER	1
19	PDR-1-19	FLOOR MEMBER	1
20	PDR-1-20	LIGHT CURTAIN BAR	1



DARKROOM FRAME

FIGURE 7-1

PARTS LIST

SEE FIGURE 7.2

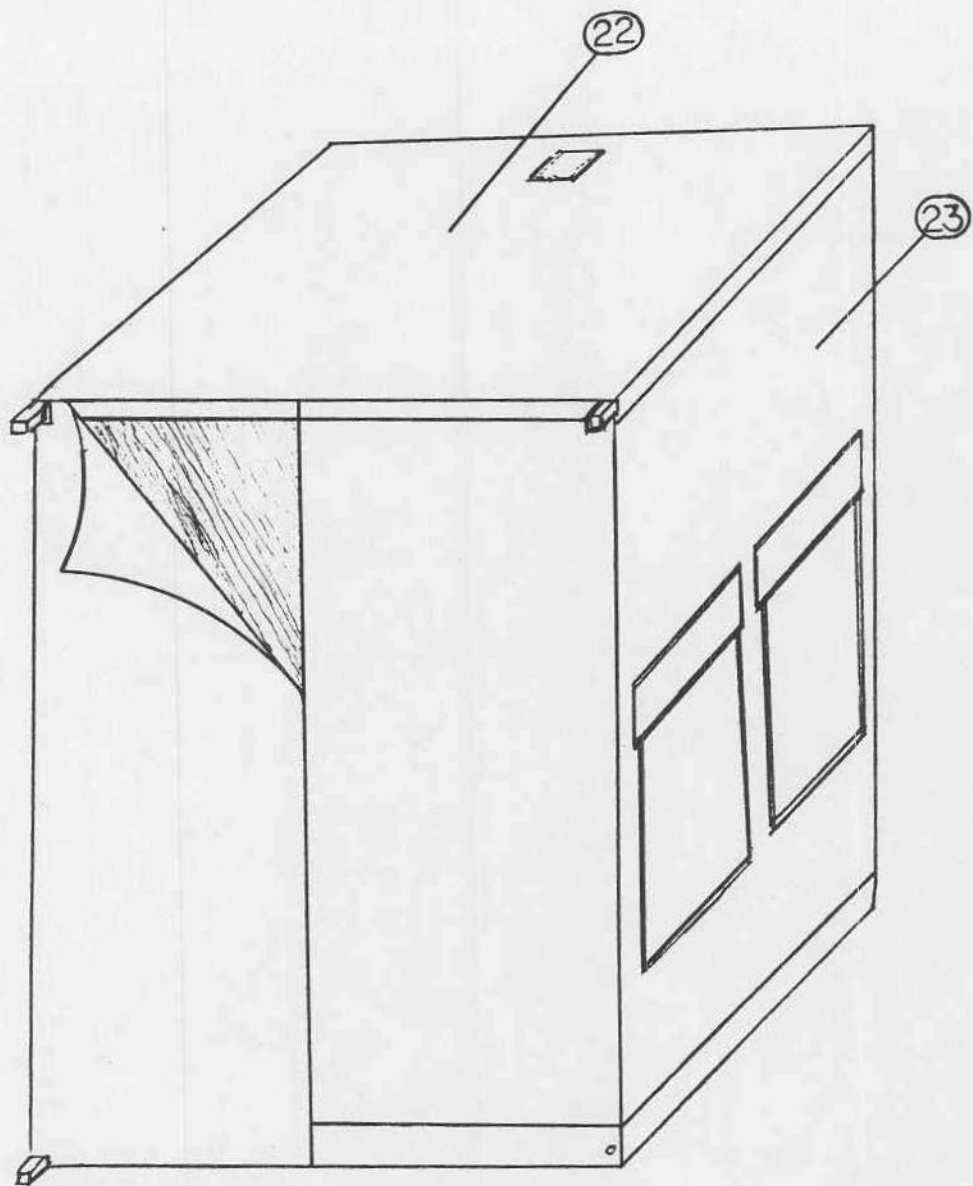
INDEX NO	PART NUMBER	DESCRIPTION
22	PDR-1-22	ROOF PANEL
23	PDR-1-23	DARKROOM AREA COVER

SEE FIGURE 7.3

INDEX NO	PART NUMBER	DESCRIPTION
24	PDR-1-24	OPTIONAL MODULE COVER

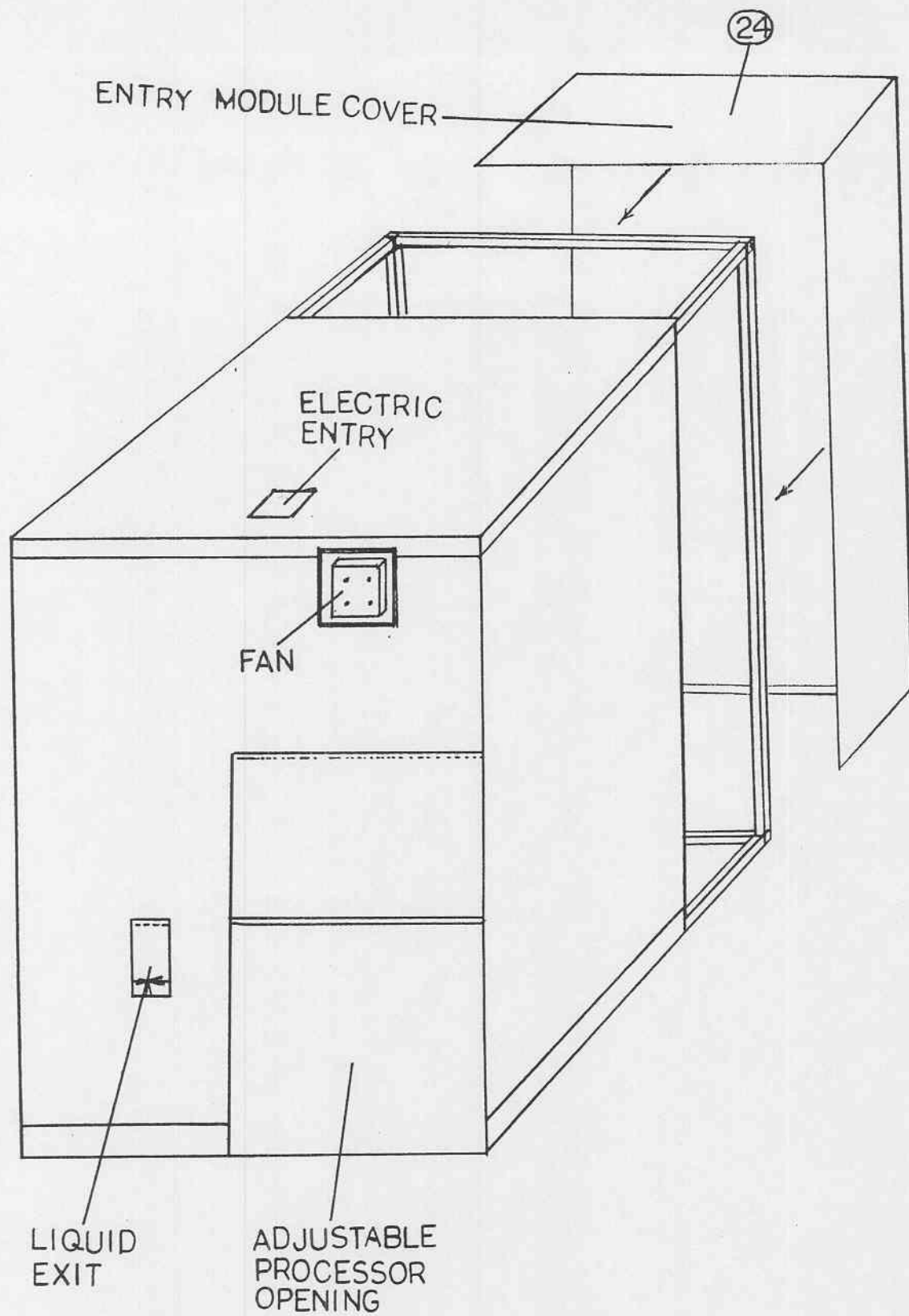
SEE FIGURE 7.4

INDEX NO	PART NUMBER	DESCRIPTION
25	PDR-1-25	FAN ONLY
26	PDR-1-26	FAN HOUSING, ASSEMBLY COMPLETE



PORTABLE X-RAY DARKROOM
(ENTRY MODULE REMOVED)

FIGURE 7-2



PORTABLE X-RAY DARKROOM
(REAR VIEW)

FIGURE 7-3

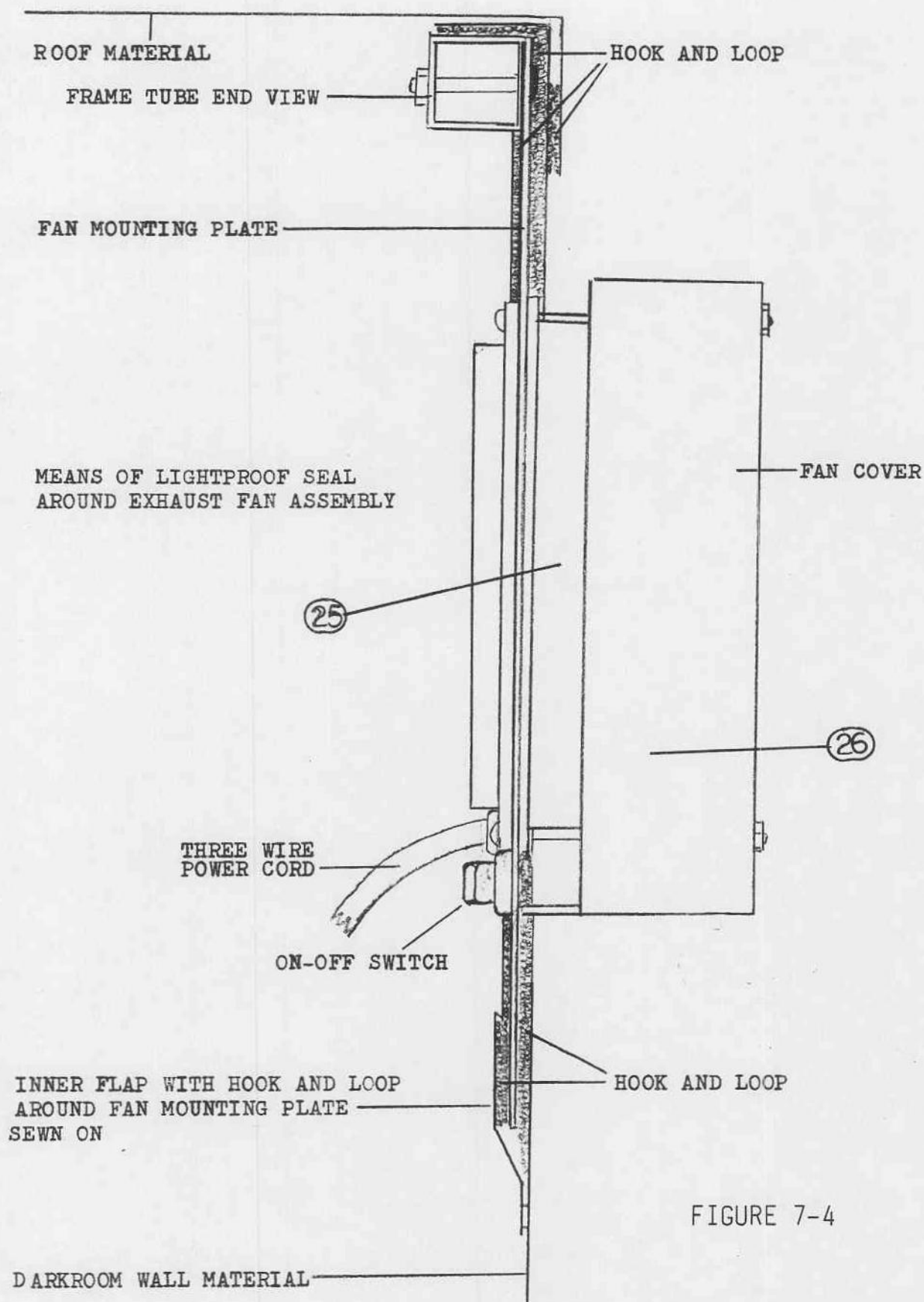


FIGURE 7-4

PARTS LIST

SEE FIGURE 7.5

INDEX NO.	PART NO	DESCRIPTION
27	PDR-1-27	CORD SET
28	PDR-1-28	115 VAC OUTLET
29	PDR-1-29	FUSE
30	PDR-1-30	TRANSFORMER
31	PDR-1-31	HOUSING

SEE FIGURE 7.6

INDEX NO.	PART NO.	DESCRIPTION
32	PDR-1-32	LIGHT ASSY, COMPLETE
33	PDR-1-33	FILTER
34	PDR-1-34	LIGHT BULB
	PDR-1-35	ELECTRICAL STRIP

STEP-DOWN TRANSFORMER

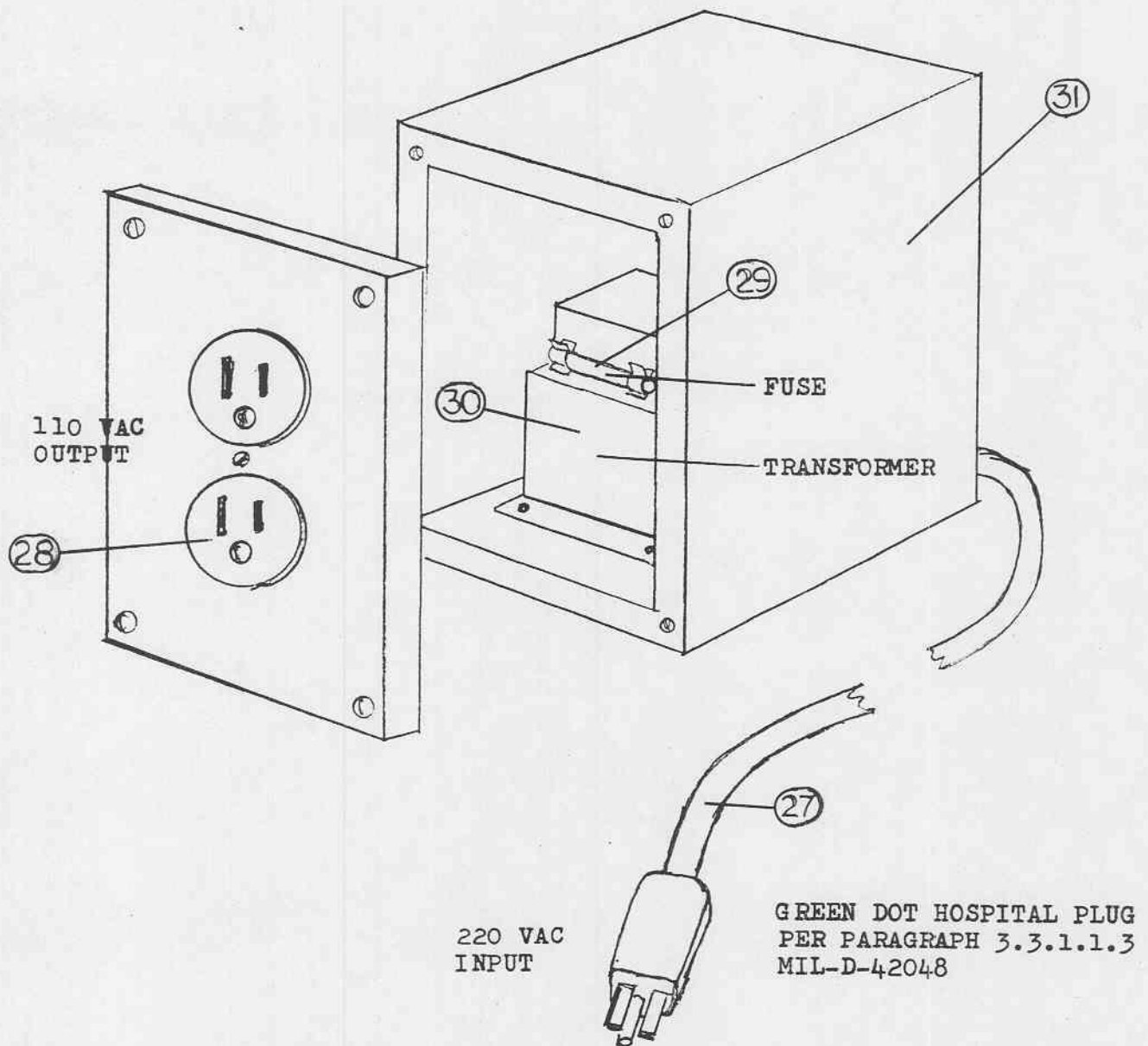


FIGURE 7-5

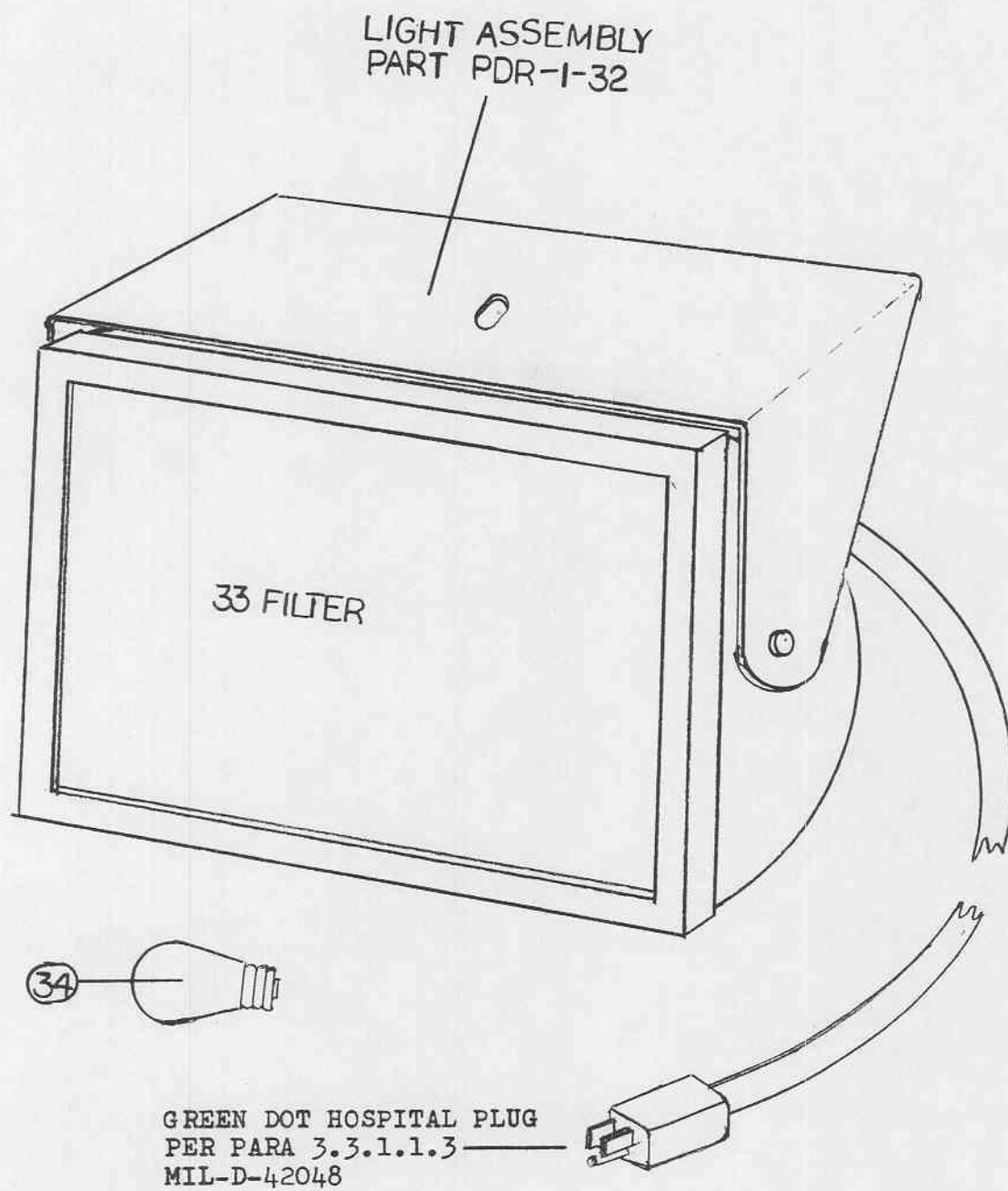


FIGURE 7-6

X-RAY SAFELIGHT